CLAIMS

What is claimed:

1. A method for automatic installation of a digital certificate on a network device in a data-over-cable system, the method comprising:

determining whether a digital certificate is installed on the network device; if not,

generating a digital certificate filename on the network device;

sending a digital certificate request including the digital certificate filename to a predetermined network server;

receiving a digital certificate file including at least one digital certificate from the network server; and

storing the at least one digital certificate received from the network server on the network device.

2. A computer readable medium having stored therein instructions for causing a processor to execute the method of claim 1.

3. The method of claim 1, wherein the network device comprises a cable modem, and the network server comprises a Trivial File Transfer Protocol server.

4. The method of claim 1, wherein the digital certificate comprises an X.509 security digital certificate.

5. The method of claim 1, wherein the step of generating a digital certificate filename comprises using a type of the network device, a physical address of the network device and an authentication data string.

6. The method of claim 5, wherein the authentication data string is generated on the network device by applying a hash function to at least one configuration setting associated with the network device.

7. The method of claim 6, wherein the at least one configuration setting comprises a MAC address, a serial number or a secret string.

8. The method of claim 1, further comprising:

obtaining a globally routable network address on the network device prior to sending the digital certificate request to the network server; and

employing the globally routable network address for sending the digital certificate request to the network server.

9. The method of claim 8, wherein the step of obtaining the globally routable network address on the network device comprises:

retrieving network address information from at least one data packet sent from at least one customer entity; and

obtaining a physical address of a network gateway associated with the at least one customer entity.

10. The method of claim 9, wherein the network address information comprises on Internet Protocol address and a Medium Access Control address associated with the customer entity.

5   11. The method of claim 1, further comprising:

validating the at least one digital certificate received from the network server prior to storing the at least one digital certificate on the network device.

12. The method of claim 1, wherein the at least one digital certificate
10   comprises a device digital certificate.

13. The method of claim 12, wherein the at least one digital certificate further comprises a network device manufacturer digital certificate.

15   14. A method for providing digital certificates to at least one network device in a data-over-cable system, the method comprising:

receiving a digital certificate request including a digital certificate filename on a network server from a network device;

authenticating the request on the network server using at least one parameter
20   specified in the digital certificate filename;

generating at least one digital certificate for the network device; and

providing the at least one digital certificate from the network server to the network device.

15. A computer readable medium having stored therein instructions causing a processor to execute the method of claim 14.

16. The method of claim 14, wherein the filename comprises a type of the network device, a physical address of the network device, and authentication data string generated on the network device.

17. The method of claim 16, wherein the step of authenticating the request using the at least one parameter specified in the digital certificate filename comprises:

generating an authentication data string on the network server; and

comparing the authentication string generated on the network server with the authentication data string specified in the received digital certificate filename.

18. The method of claim 14, wherein the network server comprises a Trivial File Transfer Protocol server.

19. The method of claim 14, wherein the at least one digital certificate for the network device is generated on the network server.

20. The method of claim 14, further comprising:

requesting a digital certificate from a second network server upon receiving the digital certificate request from the network device; and

receiving the digital certificate on the network server from the second network server, wherein the second network server comprises a certificate authority server.

21. A system for dynamic digital certificate installation in a data-over-cable network, the system comprises, in combination:

a network device configured to request a digital certificate from a predetermined network server; and

the network server configured to dynamically generate a digital certificate upon receiving a digital certificate request from the network device, and further configured to provide the digital certificate to the network device.

22. The system of claim 21, wherein the network device comprises a cable modem, and the network server comprises a Trivial File Transfer Protocol ("TFTP") server.

23. The system of claim 21, wherein the network server's address is installed on the network device prior to requesting the digital certificate from the predetermined network server.

24. The system of claim 21, wherein the network device is further arranged to install the digital certificate in a memory unit upon receiving the digital certificate from the network server.

25. The system of claim 21, wherein the digital certificate comprises an X.509 certificate.